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HKS HKS-3KW-4HP

HKS VFD 3KW 4HP 220V Variable Frequency Drive User Manual

Model: HKS-3KW-4HP | Brand: HKS

1. Introduction and Overview

This manual provides essential information for the safe and efficient operation of your HKS 3KW 4HP 220V Variable Frequency Drive (VFD). Please read this manual thoroughly before installation, operation, or maintenance to ensure proper usage and to prevent damage or injury. This VFD is designed to control the speed of three-phase asynchronous motors, offering precise frequency and voltage regulation.



Figure 1: HKS 3KW 4HP 220V Variable Frequency Drive

2. Product Features

- **Versatile Power Input:** Supports both single-phase and three-phase AC 220V (180-250V) input, providing three-phase 220V output.
- **Wide Frequency Range:** Offers an input frequency of 40-60Hz and a broad output frequency range of 0-400Hz for flexible motor control.
- **Intuitive Interface:** Equipped with a user-friendly display and control buttons for quick setup and operation.
- **Detachable Control Panel:** The control panel can be detached and connected remotely for convenient operation in various setups.

- **Comprehensive Protection:** Features multiple safety mechanisms including overload protection, fuse protection, overvoltage protection (DC voltage > 400V), low voltage protection (DC voltage < 200V), restart protection, stall protection, short circuit protection, and overheat protection.
- **Optimized Noise Control:** Utilizes excellent PWM control technology and component compatibility design to minimize noise and electromagnetic interference.
- **Efficient Cooling:** Designed with ample space for cooling between components and multiple ventilation holes in the casing to ensure a longer service life.



Figure 2: Multiple Protection Features



Figure 3: Detachable Control Panel for Remote Control

3. Specifications

Attribute	Value
Model Name	HKS-3KW-4HP
Power	3 KW (4HP)
Input Voltage	AC 220V (180-250V)
Output Voltage	220V
Input Current	14A
Output Current	20A

Attribute	Value
Input Frequency	40-60HZ
Output Frequency	0-400HZ
Input Phase	Single-phase or Three-phase
Output Phase	Three-phase
Product Dimensions	6.4 x 4.9 x 6.7 inches
Item Weight	4.11 pounds
Included Components	VFD unit (1)



Figure 4: Product Dimensions

4. Safety Information

WARNING: Electrical shock hazard. Read all safety instructions before use.

- Always ensure the power is turned off and discharged before inspecting or working on the VFD. Discharge time is greater than 5 seconds.
- Do not connect AC power directly to the output terminals (U, V, W) of the VFD.
- Select a VFD model with a power rating at least 15% greater than the load's power rating, especially for heavy-duty motors.
- Ensure your motor is a 3-phase asynchronous motor before purchasing and connecting.
- To protect the VFD, always press the red "Stop" button and turn off the power when you stop using it.
- When the VFD is working, the inside of the heat sink may reach about 176°F (80°C). Exercise caution and ensure adequate ventilation.
- No switch should be installed between the VFD and the load. If a switch function is required, refer to the wiring diagram for proper implementation using control signals.
- Use the Δ (Delta) wiring method for the load terminals of your motor.
- Ensure proper grounding of the VFD unit.

5. Setup and Installation

5.1 Wiring the VFD

Proper wiring is crucial for the safe and correct operation of the VFD. Follow the instructions below and refer to the wiring diagrams.

1. Ensure the VFD is disconnected from all power sources.
2. Remove the terminal cover to access the wiring connections.
3. Connect the 3-phase power supply to the R, S, T terminals. If using single-phase power, connect the two lines to R and T terminals separately, ensuring the voltage difference is approximately 220V (±15%).
4. Connect the motor to the U, V, W output terminals. Ensure the motor is wired in a Delta (Δ) configuration.
5. Connect the ground wire to the grounding terminal.

▶ **Watch video online**
HKS A2 Series VFD(220V)

Video 1: How To Connect Power To VFD. This video demonstrates the process of connecting the power supply to the VFD unit, including both 3-phase and single-phase connections.



Figure 5: Easy Connection Diagram for VFD and Motor

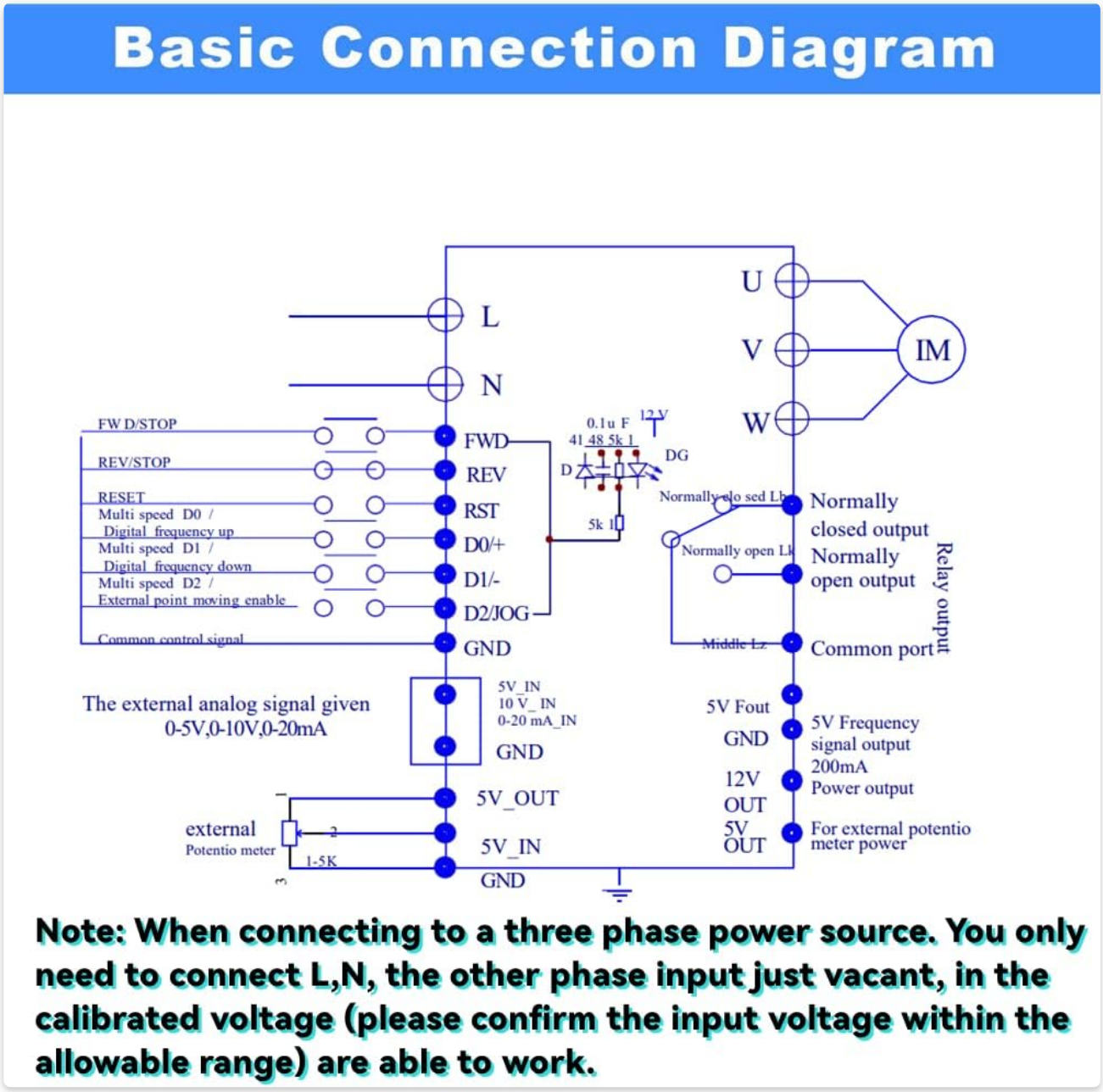


Figure 6: Basic Connection Diagram for VFD

6. Operating Instructions

6.1 Control Panel Overview

The VFD features an intuitive control panel for easy operation. Familiarize yourself with the buttons and indicators:

- **RUN/STOP Button:** Press to start or stop the inverter.
- **SET Button:** Enters menu settings, saves parameters, and navigates menu items.
- **UP/DOWN Arrows:** Used for menu item selection and sub-item modification.
- **REV/FWD Buttons:** Changes the inverter's direction (reverse/forward).
- **Adjustment Knob:** Controls the frequency.
- **Digital LCD:** Displays runtime frequency or parameter data.
- **Indicators (ERROR, FWD, REV, ANA, SEG, PANEL):** Provide status feedback.

6.2 Initial Parameter Setting

For optimal performance, it is recommended to initialize and set key parameters. The following video guides through the initial setup for 50Hz parameters:

▶ **Watch video online**
HKS A2 Series VFD(220V)

Video 2: VFD Initialization Parameter Setting Guide. This video provides a step-by-step guide on how to initialize and set essential parameters for the VFD, including PN32, PN02, PN03, PN04, PN10, and PN12.

Important Note:

- The demonstration in the video is primarily for three-phase asynchronous motors.
- If you need to connect other types of loads, the parameter settings (PN parameters) will need to be adjusted according to your specific requirements. Refer to chapters 5 to 7 in the full PDF manual for detailed parameter explanations.
- For complex needs or specific questions, please consult customer service for accurate advice.

6.3 Jog Function

The jog function allows for momentary operation of the motor at a set frequency. This is useful for testing motor direction or making small adjustments.

▶ **Watch video online**
HKS A2 Series VFD(220V)

Video 3: Jog Function Demonstration. This video illustrates how to use the jog function on the VFD control panel, including pressing FWD for forward rotation (green FWD light) and REV for reverse rotation (red REV light).

7. Maintenance

Regular maintenance ensures the longevity and reliable operation of your VFD. Always disconnect power before performing any maintenance.

- **Cleaning:** Periodically clean the VFD's exterior and ventilation openings to prevent dust accumulation, which can hinder cooling. Use a soft, dry cloth. Do not use liquid cleaners.
- **Inspection:** Regularly inspect wiring connections for tightness and signs of wear or damage. Check for any unusual noises or odors during operation.
- **Environment:** Ensure the VFD is operated within its specified environmental conditions (temperature, humidity, dust level) to prevent premature failure.

8. Troubleshooting

If you encounter issues with your VFD, refer to the following common troubleshooting steps. For persistent problems, consult the full user manual or contact customer support.

- **No Power/Display Off:** Check power supply connections, circuit breaker, and ensure the VFD is receiving the correct input voltage.
- **Motor Not Running:** Verify the RUN command is active, check frequency settings (PN02, PN10), ensure motor wiring is correct (Delta connection), and check for any error codes on the display.
- **Overload Error:** Reduce the load on the motor, check motor current, or consider if a higher power VFD is

needed for your application.

- **Overvoltage/Low Voltage Error:** Check input voltage stability and ensure it is within the specified range (180-250V AC).
- **Overheat Error:** Ensure adequate ventilation around the VFD, clean any dust from cooling fins, and check ambient temperature.
- **Unclear Settings/Operation:** Refer to the detailed parameter settings in the full user manual (chapters 5-7) or contact customer support for guidance.

9. Warranty and Support

The HKS VFD 3KW 4HP 220V Variable Frequency Drive comes with a standard manufacturer's warranty. For specific warranty terms, conditions, and duration, please refer to the warranty card included with your product or contact HKS customer support directly. Our technical support team is available to assist with any questions regarding installation, operation, troubleshooting, or product-related inquiries.
Contact Information: Please refer to the product packaging or the official HKS website for the most current customer support contact details.

10. Further Resources

For a comprehensive guide and detailed parameter settings, please download the official User Manual in PDF format:

Download Full User Manual (PDF)

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